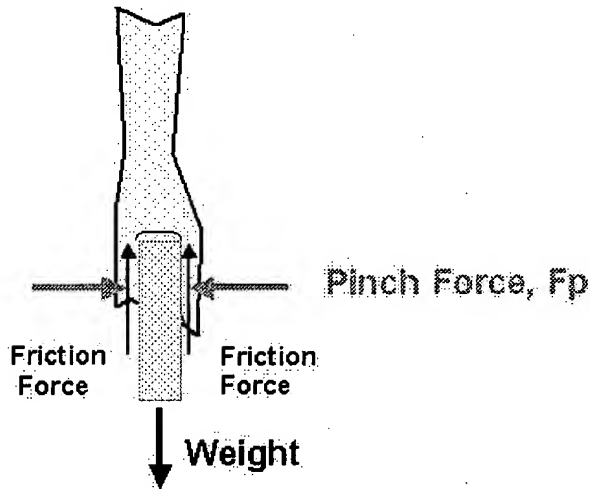


## ACGIH TLV for Mono-task Hand Work Estimating Force Based on Biomechanics

Exertion of force against the sides of the work produce friction to overcome the force of gravity



$$F_p > W / (2 \times \text{Coefficient of friction})$$

Note:  $F_p$  is the minimum amount of force required to keep the object from slipping out of the workers hand. Most people exert more than is necessary hold work objects.

### Coefficient of Friction for skin

Material	Dry	Moist	Combined
Sand Paper (#320)	--	--	0.61 + 0.10
Smooth Vinyl	--	--	0.53 + 0.18
Textured Vinyl	--	--	0.50 + 0.11
Adhesive Tape	0.41 + 0.10	0.66 + 0.14	--
Suede	0.39 + 0.06	0.66 + 0.11	--
Aluminum	--	--	0.38 + 0.13
Paper	0.27 + 0.09	0.42 + 0.07	--

From: Buchholz B, Frederick LJ/. An investigation of human palmar skin friction and the effects of materials, pinch force and moisture. Ergonomics 1988;31(3):317-325

Also see: Bobjer O, Johansson, S, Piguat S. Friction between hand and handle. Effects of oil and lard on textured and non-textured surfaces; perception of discomfort. Appl. Ergo 1993; 24(3):190-202.

### Example:

Given a cardboard weighing 15N. Paper has an average coefficient of friction from 0.25 to 0.50.

Moist skin:  $F_p > 15N / (2 \times 0.5) = 15N$

Dryskin:  $F_p > 15N / (2 \times 0.25) = 30N$


**AERMAT 9000™**
**Technical Data Sheet**

Possible Applications	Availability
Entryways Galleys Lavatories Jetways	Continuous Yardage 60" Wide "Super Seam" parts up to 116" Wide

PROPERTY	TEST METHOD	AERMAT 9000™
Gauge*	Measured before texturing	0.015" (2.67 mm)
Weight	ASTM 9-1-3881	95 oz/sq. yd +/- 5 (3222 gm sq. m =/-170)
Flammability	FAR 25.853 Para. A	Pass
Splice Strength	ASTM D 1682	>100 lbs (>45.4 kg)
Abrasion	ASTM D 4060 H-18 Wheel	445 mg
Coefficient of Friction Sliding Friction	MIL W-5044C - Sliding Friction	
	Rubber - Dry	1.08
	Rubber - Wet	0.89
	Leather - Dry	0.85
	Leather - Wet	0.63
Coefficient of Friction Sliding Friction	ASTM D 4518 - Static Friction	
	Rubber - Dry	1.07
	Rubber - Wet	0.73
	Leather - Dry	0.58
	Leather - Wet	0.68
Hardness	ASTM D 2240	80 deg. Shore A
Colorfastness	ASTM G -533 QUV UVA 340 Bulb	100 hrs - No Change
Dimensional Stability	ASTM 1204 - 54 30 MIN @ 200 deg. F	<0.2%
Peel Strength	ASTM D 903	Pass
Permeability	ASTM E 96	No Visible Transmission
Cleanability	BMS 286B	No Staining
Tape Compatibility	ASTM D 903 ASTM D 1000	Pass Pass

\* Gauge is Measured before texturing.

Custom colors are available in both 60" (152 cm) and 116" (295 cm) widths with slightly longer lead-times .

The information in this literature is based on Schneller's own testing and experience. No Warranty is expressed or implied regarding the accuracy of the data. It is the responsibility of the purchaser of Schneller products to determine their suitability for the intended application. Schneller will accept



## Marghestone Specifications and Test Data:

**Composition:** Selected Marble Micro Chips (93%) and filler in a special polyester resin binder.

**Standard Size:** The standard tile size is 30 x 30 x 0.9 cm (12" x 12" x 3/8" nominal) with cushion edge for ease of installation. Weight is 5lbs. per tile.

**Standard Finishes:** Polished

**Installation Techniques:** Marghestone can be set in the same way as traditional marble, ceramic and other rigid type tiles, i.e., adhesive or sand cement fixing, and grouted upon completion. Verde Mare requires 100% solids epoxy. Please ask for our MAPEI specifications guidelines for more details. We recommend 1/16" - 1/8" grout joints using non-sanded grout.

## ASTM Test Index

**Abrasive Wear:** (ASTM C-501) 40

**Indentation Hardness:** (ASTM D-2583) 121

**Compression Strength:** (ASTM D-695) 13,500 psi

**Dimensional Stability:** (ASTM D-1042) -0.005% change

**Stain Resistance:** (ASTM D-2299) Not affected by chalk, crayon, ink, shoe polish, acrylic paint, and tea. Completely removed after 16 hours of contact at 50 C.

**Coefficient of Friction:** (ASTM D-2047)

Wet Leather Sole - Friction Coefficient: 0.60 / Dry Leather Sole - Friction Coefficient: 0.55

Wet Rubber Sole - Friction Coefficient: 0.65 / Dry Rubber Sole - Friction Coefficient: 0.70

Wet Neoprene Sole - Friction Coefficient: 0.65 / Dry Neoprene Sole - Friction Coefficient: 0.70

Note: It is generally recognized that a value of 0.5 or greater is needed by this test method for walking surface to be considered slip resistant.

**Mean Toxicity Index:** (NES 713-1985) 2.8

**Smoke Emission:**

Ao (on) = 50 (abs) m2/burn area

Ao (off) = <200 (abs) m2/burn area

Satisfies the smoke emission requirements when assessed and compared to LUL requirements in accordance with the code of Practice for Fire Safety (material used in the underground; August 1990) for use on the rolling stock. (BS6853:1987)

**Critical Radiant Flux:** 1.13 watts per sq. cm. Class A fire hazard rating.



## ***"So"Suede! Comfort linings***

### **So Soft, So Supple; Sensational Shoes!**

Cushman & Marden Inc. is pleased to announce a new comfort lining with the soft, supple feel of suede and the performance of a high-tech super lining. "So"Suede! is a superior fabric designed for use in footwear, apparel and accessories as a high comfort, high performance lining. Peabody, MA - based Cushman & Marden, a supplier and converter of textile goods used in footwear, apparel and accessories, developed this fabric in response to the increased demand for an affordable comfort lining, appropriate in a wide variety of footwear styles. "So"Suede! is used in multiple footwear styles, from women's dress shoes to hiking boots and casual or work footwear.

If a lining material can truly have it all, "So" Suede! may be it! Its soft, supple texture is incredibly comfortable, while it has high-tech properties which give it enhanced performance.

"So" Suede! is very strong and durable, as well as mildew, odor and rot resistant. Also, "So"Suede! incorporates the exclusive Cushmar Quickwick AQUA TRANSPORT (AT) System to provide superior dryness characteristics in both wicking and absorption/dissipation of moisture. Breathability is enhanced which allows for a cool, dry foot environment.

While "So"Suede! has all the characteristics of a high performance comfort lining, the one it doesn't have is a high price tag! This fabric is quite affordable which pleases not only the footwear manufacturers but also retailers and consumers. "So"Suede! can be found in top quality footwear, apparel and accessories and is available in a number of different packages. Through the increased acceptance by designers, manufacturers, retailers and consumers, "So"Suede! is creating Sensational Shoes!

"So"Suede! and Cushmar Quickwick AT System are trademarks of Cushman & Marden, Inc.



## **MATERIAL SPECIFICATIONS**

**DESCRIPTION:** *A Synthetic Fabric with a soft, suede-like finish.*

**USES:** *Used as a lining material in footwear, apparel and accessories.*

### **UNIQUE CHARACTERISTICS:**

- *Incorporates Cushmar Quickwick Aqua-Transport System: A finish giving the fabric enhanced wicking ability of moisture, with superior absorption and quick-drying characteristics.*
- *Is MARDENIZED (A finish that prevents the growth of mildew, fungus, rot & odor).*
- *Has Stretch-Tek allowing for a degree of stretch in all directions.*

### **PROPERTIES\*:**

**CONSTRUCTION:** *100% Synthetic Knit*

**WIDTH:** *60 inches uncombined*

**WEIGHT:** 4.8 ounces per square yard.

**MULLEN BURST (psi):** 100

**GRAB TENSILE (lbs.):** 45 x 65

**ABRASION RESISTANCE:**

- *Martindale: (Moderate Wear Rating) DRY: 25,600+ WET: 12,800+*
- *Taber (CS10, 500g): 4,000+ cycles*

**CONCLUSION:** *"So" Suede! is an excellent fabric, both in looks & performance. Performs well as a lining material, providing superior durability and soothing comfort.*

\* Data reported from independent testing, exceeding the industry's maximum requirements for most demanding footwear applications.

Back to [Cushman & Marden's PRODUCTS Page](#)